

are rarely seen, but it is evident that they arise from the outer part of the parent by a growth of several spinules in a definite direction, by their arching upwards and inwards, and meeting so as to form a hood closed behind.

The texture of the hood is very close, the openings in it are extremely small, and the spinules on the parent corallite, which were within the boundary of the hood-forming ones, are still visible, and remain so until after the septa have appeared on the opposite side of the inner part of the young corallite. The usual exogenous growth produces a slight nariform swelling on the end of the bud. One minute bud may be seen behind another on the same axial corallite; but this is not a common occurrence, for the solidity of the structures of the colony appears to have been the result of very slow growth, and slow growth seems to be incompatible with budding, although not with increased deposit of the calcareous element of the sclerenchyma. Exceedingly narrow tubular passages may be seen in sections or in fractures, and they lead from the cavities of corallites to the surface, where their opening is to be detected with some difficulty, as it is surrounded by the bases of spinules.

The wall of the corallites is a thick lamina, as seen in transverse sections, and is surrounded by very regularly spaced radially disposed spinules, looking as if they were sections of costæ; but these last do not exist. Two opposite primaries, separate at the calice, are seen to be often united lower down, and they are stout and singularly imperforate.

Sometimes the four other primary septa, which are small and inconspicuous in the calice, are well developed deeper down; there they may unite with the larger primaries. Any members of the second cycle are rarely seen; but still they do sometimes exist. Finally, it is remarkable that although the other species of *Madrepora* noticed in this communication have either fairly developed dissepiments, endothecal in kind, or else true tabulæ, this last-mentioned form has neither of these internal structures.

XXVI.—*Contributions to a Knowledge of Malayan Entomology*. Part III. By W. L. DISTANT.

THE present short paper is again devoted wholly to Rhopalocera, and is descriptive of some new species contained in a collection made by Herr Künstler in Perak, and now belonging to the Calcutta Museum. For an opportunity of examining this collection I am much indebted to the authorities of that

museum, who, acting on the initiative of my friend Mr. Lionel de Nicéville, most considerately forwarded a complete set of specimens to London to aid me in rendering my 'Rhopalocera Malayana' as comprehensive as existing materials will allow it to be made in that direction. It is by such help (and I have received much unexpected and valuable assistance from other quarters) that faunistic publications can be encouraged and that the maximum of such work may be completed by a proper division of labour.

The species here described will be all subsequently figured.

RHOPALOCERA.

Fam. *Nymphalidæ*.

Subfam. *NYMPHALINÆ*.

Chersonesia peraka, n. sp.

Allied to *C. rahria*, Moore, but smaller, the ground-colour more ochraceous and less rufous; markings similar, but with the transverse fasciæ broader, much darker, and placed closer together. The obsolete caudate prolongations in *C. rahria* near the apices of the first and third median nervules are scarcely visible in *C. peraka*, and a structural peculiarity exists in the first subcostal nervule of the anterior wings, which, in the species I here describe, impinges near its base on the costal nervure.

Exp. wings, ♂ 28 millim., ♀ 34 millim.

Hab. Perak (*Künstler*, Calcutta Mus.).

Tanaëcia Nicevillei, n. sp.

Male. Wings above very dark brownish, with a violaceous tinge; anterior wings with the cell crossed by two basal black lines, continued beneath to the median nervure, two black lines near middle of cell, the innermost of which has a parallel line between the lower median nervule and the submedian nervure, and a single black line at end of cell; a small bluish spot near apex and a marginal bluish fascia commencing about centre of wing and gradually widening to outer angle, where it possesses two inner lanceolate black spots margined with bluish beneath the lower median nervule, and an inner black streak at inner margin: posterior wings with a very broad outer marginal bluish fascia, narrowest at apex of wing, inwardly margined with small blackish spots, and containing a central series of blackish spots placed between the nervules, which become practically obsolete at the area of the median nervules; three obscure blackish lines crossing cell, two near

centre, and one at apex; abdominal margin brownish ochraceous. Wings beneath pale brownish ochraceous: anterior wings with the black linear markings as above, followed by a transverse series of five broad fuscous streaks placed between the nervules, those at end of cell largest; a pale violaceous marginal fascia with an inner series of lanceolate blackish spots: posterior wings with the broader outer bluish fascia as above, but paler and more violaceous, its central spots smaller, but more continuous and distinct, the three dark lines crossing cell as above, a looped line beneath the costal nervure, and an outer cellular series of three dark spots separated by the lower subcostal and discoidal nervules. Body above and beneath, with legs, more or less concolorous with wings.

Exp. wings, ♂ 57 millim.

Hab. Perak (*Künstler*, Calcutta Mus.).

This interesting species of *Tanaëcia* belongs to the section of the genus which includes *T. flora*, Butl., and, like it, has the coloration and appearance of an Euthalid above.

Fam. *Lycænidaë*.

Loxura cassiopeia; n. sp.

Male. Wings above dark reddish ochraceous; anterior wings with the costal margin (as far as subcostal nervure) and the outer margin (broadest at apex) fuscous or black, the base tinged with olivaceous brown; posterior wings with the outer margin fuscous (darkest at apex), the fringe ochraceous, the base and abdominal area more or less olivaceous brown, the tail-like appendage ochraceous with an obscure central reddish line, and the apex whitish. Wings beneath bright ochraceous, with the following brownish spots:—anterior wings with one about centre of cell, three discocellular and contiguous at end of cell, and beyond these are two separated by the second subcostal nervule; a waved macular discal band and a submarginal series of very small and somewhat obsolete spots: posterior wings with some obscure basal spots, a macular band crossing disk, but not extending below third median nervule, and a submarginal series of small obscure spots as on anterior wing. Body above fuscous, beneath greyish; legs and palpi blackish, speckled with greyish.

Female. Resembling the male, but with the posterior wings above shaded with fuscous, which is darkest on costal and outer margins.

Exp. wings 34 to 35 millim.

Hab. Perak (*Künstler*, Calcutta Mus.).

This species is allied to the *L. prabha*, Moore, from the Andamans:

Panchala trogon, n. sp.

Male. Wings above bright metallic emerald-green; nervures and nervules, extreme margins of the anterior wings, costal area, abdominal area, and posterior margin—narrowing from apex to upper median nervule and then broadly to anal angle—of posterior wings dark chocolate-brown; fringe and short tail-like appendage of the same colour, the latter with its apex greyish. Wings beneath purplish brown, the lower half of anterior wings almost without the purplish reflections: anterior wings crossed by the following greyish lines:—two looped and macular crossing cell, two discocellular at end of cell (the innermost continued to third median nervule), two discal, waved and fractured, commencing near costa and terminating at third median nervule, and two submarginal, which are narrow and somewhat obsolete; from base of third median nervule to inner margin is a narrow greyish line, from which to outer angle the colour is greyish and before which is a small greyish spot: posterior wings darker purplish, the basal area beneath the median nervule clothed with long brownish hairs and with the following greyish lines:—four macular, arranged in transverse basal series, followed by three macular, situate one above and one within cell, and one irregular in shape beneath cell; these are followed by about four, much waved and fractured, crossing disk of wing, and a waved marginal line from apex to second median nervule, where there are three blackish spots, much covered with metallic greenish scales and outwardly bordered with greyish, extending to anal angle. Body above brownish; body beneath and legs somewhat paler.

Exp. wings, ♂ 36 millim.

Hab. Perak (*Künstler*, Calcutta Mus.).

This species is allied to both the *P. eumolophus*, Cram., and the *P. aurea*, Hewits., by the metallic emerald colour above; it is, however, very distinct from both, not only by the different markings beneath, but also by the much smaller brownish markings on the upper surface of the wings.

Panchala morphina, n. sp.

Male. Wings above dark shining purplish blue, the margins (narrowly), nervures, and nervules more or less blackish; abdominal area of the posterior wings fuscous. Wings beneath pale brownish: anterior wings with the basal area from costa to median nervule, and extending outwardly to a little beyond cell, darker brown, followed by a waved fascia of

the same colour, terminating beneath second median nervule, where it is narrowest; the outer margin also darker brown, with the apex and extreme margin pale violaceous. Posterior wings with the basal fourth dark chocolate-brown, with a narrow outer violaceous margin; a small chocolate-brown spot margined with violaceous above the submedian nervule, a narrow waved central violet-margined fascia crossing disk, strongly fractured at end of cell, and then more narrowly continued to internal nervule; this is followed by a short and somewhat broken fascia, commencing at lower subcostal nervule and narrowly terminating at lower median nervule, the whole outer margin broadly infuscated, the apex and extreme margin pale violaceous. Body and legs more or less concolorous with wings.

Exp. wings, ♂ 51 millim.

Hab. Perak (*Künstler*, Calcutta Mus.).

This beautiful species, of which I have only seen two male specimens, belongs to the *Apidanus* section of the genus.

XXVII.—*On the Rate of Development of the Common Shore-Crab* (*Carcinus mænas*). By GEORGE BROOK, F.L.S.

[Plate VII.]

FOR over two years now I have been carrying on a series of experiments in my aquarium, with the object of throwing some light on the rate of development of *Carcinus mænas*. For this purpose from twenty to thirty specimens have been kept and isolated, and every cast shell has been carefully preserved and labelled. I should have liked, if possible, to have traced this development from the newly hatched Zoëa, but although I have had thousands of Zoëæ hatched in confinement I never yet succeeded in rearing any past the second or third moult. In August last, however, I collected a few of the Megalopa stage of *Carcinus* at Redcar, which at the next moult assumed the ordinary adult form of the Brachyuran. As soon as this stage was reached there was no difficulty in feeding them; and I am now able to combine twelve months' observations on this gathering with the material I had obtained from other specimens.

Mr. C. Spence Bate, in his paper on the "Development of Decapod Crustacea" (Phil. Trans. 1858), gives a full account of the changes gone through by the young *Carcinus* from leaving the egg to assuming the adult form. He says (p. 597):—"Having pursued the course of development from the larva to the mature form of the Brachyuran decapod